

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 21 December 1998 (21.12.98)	
International application No. PCT/GB98/01587	Applicant's or agent's file reference IES/5782-PCT
International filing date (day/month/year) 01 June 1998 (01.06.98)	Priority date (day/month/year) 02 June 1997 (02.06.97)
Applicant CHRISTOU, Victor	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
02 December 1998 (02.12.98)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Carine SEVILLANO Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TReATY

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

WILKINSON, Stephen, John
Stevens, Hewlett & Perkins
1 St. Augustines Place
Bristol BS1 4UD
ROYAUME-UNI

Date of mailing (day/month/year) 19 May 1999 (19.05.99)	
Applicant's or agent's file reference IES/5782-PCT	IMPORTANT NOTIFICATION
International application No. PCT/GB98/01587	International filing date (day/month/year) 01 June 1998 (01.06.98)

1. The following indications appeared on record concerning:

☐ the applicant
 ☐ the inventor
 ☒ the agent
 ☐ the common representative

Name and Address STEVENS, Ian, Edward Stevens, Hewlett & Perkins 1 St. Augustine's Place Bristol BS1 4UD United Kingdom	State of Nationality	State of Residence
	Telephone No. 44 117 9226007	
	Facsimile No. 44 117 9226009	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person
 ☒ the name
 ☐ the address
 ☐ the nationality
 ☐ the residence

Name and Address WILKINSON, Stephen, John Stevens, Hewlett & Perkins 1 St. Augustines Place Bristol BS1 4UD United Kingdom	State of Nationality	State of Residence
	Telephone No. 44 117 9226007	
	Facsimile No. 44 117 9226009	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Maria Kirchner Telephone No.: (41-22) 338.83.38
---	---

ATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

WILKINSON, Stephen John
Stevens Hewlett & Perkins
1 St Augustine's Place
Bristol BS1 4UD
GRANDE BRETAGNE

BRISTOL

6 SEP 1999

FILE
No.

2/10

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

Date of mailing
(day/month/year)

03.09.99

Applicant's or agent's file reference
IES/5782-PCT

IMPORTANT NOTIFICATION

International application No.
PCT/GB98/01587

International filing date (day/month/year)
01/06/1998

Priority date (day/month/year)
02/06/1997

Applicant

ISIS INNOVATION LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



European Patent Office
D-80298 Munich
Tel. (+49-89) 2399-0 Tx: 523656 epmu d
Fax: (+49-89) 2399-4465

Authorized officer

Borinski, W

Tel. (+49-89) 2399-8237



INTERNATIONAL SEARCH REPORT

Inte Application No

PCT/GB 98/01587

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C09K11/06 H05B33/14 C07D401/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C09K H05B C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	ARMAROLI N ET AL: "Luminescence properties of Eu/sup 3+/, Tb/sup 3-/, and Gd/sup 3+ complexes of the hexadentate N-donor podand tris-3-(2-pyridyl)pyrazol-1ylhydroborate" CHEMICAL PHYSICS LETTERS, 26 SEPT. 1997, ELSEVIER, NETHERLANDS, vol. 276, no. 5-6, pages 435-440, XP002074915 ISSN 0009-2614 see page 435 - page 440	1-4, 11, 12
P, X	WO 98 06242 A (UNIV PRINCETON ; UNIV SOUTHERN CALIFORNIA (US)) 12 February 1998 see the whole document	1-3, 8, 10, 11
A	WO 93 11433 A (WALLAC OY) 10 June 1993 see the whole document	1-23

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

24 August 1998

Date of mailing of the international search report

03/09/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Drouot, M-C

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 98/01587

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9806242 A	12-02-1998	AU 3805297 A	25-02-1998
WO 9311433 A	10-06-1993	EP 0626068 A	30-11-1994
		US 5571897 A	05-11-1996

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IES/5782-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB98/01587	International filing date (day/month/year) 01/06/1998	Priority date (day/month/year) 02/06/1997
International Patent Classification (IPC) or national classification and IPC C09K11/06		
Applicant ISIS INNOVATION LIMITED et al.		



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 02/12/1998	Date of completion of this report 03. 09. 99
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. (+49-89) 2399-0 Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer Russell, G Telephone No. (+49-89) 2399 8738 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/01587

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

Description, pages:

1-25 as originally filed

Claims, No.:

1-10,16-20 as originally filed

11-15,21-23 as received on 05/06/1999 with letter of 02/06/1999

Drawings, sheets:

1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/01587

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-23
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-23
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-23
	No:	Claims	

2. Citations and explanations

see separate sheet

Paragraph V:

1. Relevant cited prior art:

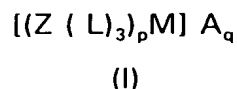
D3 WO-A-93 11 433

2. The disclosure **D3** relates to luminescent lanthanide comprising a lanthanide ion and a chelate. The chelator comprises three unsaturated heterocyclic rings covalently coupled to each other and additionally two chelating groups. The structure of the heterocyclic rings is formed from either one 2,6-pyridylene and two five-membered unsaturated heterocyclic ring moieties or two 2,6-pyridylene and one five-membered unsaturated heterocyclic ring moiety. 1,3-pyrazolylene is among the list of possible heterocyclic five-membered rings (claim 1; Examples 17, 18; Compounds 17, 18). Trispyrazolylborates ligands are not disclosed. The chelate forms in which the chelate groups together with the heterocyclic ring structure are chelated/complexed to the lanthanide ion. Example 18 describes an europium(III) chelate wherein the chelate ligand comprises two pyrazolyl groups in which one nitrogen atom of the pyrazolyl moiety forms a coordinate bond to the metal.

The chelates are useful as probes in time-resolved fluorescence microscopy, cytometry, multilabelling techniques and in process controls in industry. Their application in light emitting devices is not disclosed or suggested.

Therefore, the subject-matter of claims 1 to 23 fulfills the requirements of Articles 33(2) and 33(3) PCT.

11. Organometallic complex having the formula (I)



wherein Z, p, R¹, R², R³, R⁴, L, A, q and M are as defined in claim 3 and:

R⁴ and/or R² is -(CX₂)_nX wherein n is 0 or a positive integer from 1 to 6 and X is halogen; or R⁴ is orthodihalogenated or orthodiperhalomethylated aryl, optionally further substituted on the aryl ring; or

R² and R³ or R³ and R⁴ are linked so as to form a fused aromatic or non-aromatic ring system with the pyrazolyl ring of L.

12. Complex as claimed in claim 11, wherein M is Tb, Ce, Eu, Er, Gd, Tm, Sm or Nd.

13. Complex as claimed in claim 11 or claim 12, wherein R⁴ is trifluoromethyl.

14. Complex as claimed in any one of claims 11 to 13, wherein R³ is hydrogen and R² is trifluoromethyl.

15. Complex as claimed in any one of claims 11 to 14, wherein Z is H-B.

21. Light emitting material comprising an organometallic complex either as a film or dispersed within a matrix, the organometallic complex being a complex according to claim 11, wherein the ligands are optionally fluorinated and are arranged about the metal such that there are no carbon-hydrogen bonds within 5Å of the metal centre.

22. Light emitting material as claimed in claim 21, wherein the ligands are tridentate and there are two ligands per metal ion in the complex.

23. Light emitting material as claimed in either claim 21 or claim 22, wherein the complex is a complex according to any one of claims 12 to 17.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference IES/5782-PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 98/ 01587	International filing date (day/month/year) 01/06/1998	(Earliest) Priority Date (day/month/year) 02/06/1997
Applicant ISIS INNOVATION LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ **Certain claims were found unsearchable** (see Box I).

2. ☐ **Unity of invention is lacking** (see Box II).

3. ☐ The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing

☐ filed with the international application.

☐ furnished by the applicant separately from the international application,

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ Transcribed by this Authority

4. With regard to the title, ☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:

Figure No. --- ☐ as suggested by the applicant.

☐ None of the figures.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 98/01587

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C09K11/06 H05B33/14 C07D401/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C09K H05B C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	ARMAROLI N ET AL: "Luminescence properties of Eu/sup 3+/, Tb/sup 3-/, and Gd/sup 3+/ complexes of the hexadentate N-donor podand tris-3-(2-pyridyl)pyrazol-1ylhydroborate" CHEMICAL PHYSICS LETTERS, 26 SEPT. 1997, ELSEVIER, NETHERLANDS, vol. 276, no. 5-6, pages 435-440, XP002074915 ISSN 0009-2614 see page 435 - page 440	1-4, 11, 12
P, X	WO 98 06242 A (UNIV PRINCETON ; UNIV SOUTHERN CALIFORNIA (US)) 12 February 1998 see the whole document	1-3, 8, 10, 11
A	WO 93 11433 A (WALLAC OY) 10 June 1993 see the whole document	1-23

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

24 August 1998

Date of mailing of the international search report

03/09/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Drouot, M-C

INTERNATIONAL SEARCH REPORT

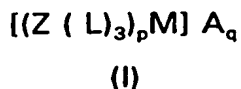
Information on patent family members

International Application No

PCT/GB 98/01587

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9806242 A	12-02-1998	AU 3805297 A	25-02-1998
WO 9311433 A	10-06-1993	EP 0626068 A	30-11-1994
		US 5571897 A	05-11-1996

11. Organometallic complex having the formula (I)



wherein Z, p, R¹, R², R³, R⁴, L, A, q and M are as defined in claim 1 and:

R⁴ and/or R² is $-(CX_2)_nX$ wherein n is 0 or a positive integer from 1 to 6 and X is halogen; or R⁴ is orthodihalogenated or orthodiperhalomethylated aryl, optionally further substituted on the aryl ring; or

R² and R³ or R³ and R⁴ are linked so as to form a fused aromatic or non-aromatic ring system with the pyrazolyl ring of L.

12. Complex as claimed in claim 10, wherein M is Tb, Ce, Eu, Er, Gd, Tm, Sm or Nd.

13. Complex as claimed in claim 11 or claim 12, wherein R⁴ is trifluoromethyl.

14. Complex as claimed in any one of claims 11 to 13, wherein R³ is hydrogen and R² is trifluoromethyl.

15. Complex as claimed in any one of claims 11 to 14, wherein Z is H-B.

21. Light emitting material comprising an organometallic complex either as a film or dispersed within a matrix, the organometallic complex being a complex of a trivalent lanthanide metal with from 1 to 3 ligands wherein the ligands are optionally fluorinated and are arranged about the metal such that there are no carbon-hydrogen bonds within 5Å of the metal centre.

22. Light emitting material as claimed in claim 21, wherein the ligands are tridentate and there are two ligands per metal ion in the complex.

23. Light emitting material as claimed in claim 21 or claim 22, wherein the complex is a complex of any one of claims 11 to 17.

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PATENT COOPERATION TREATY

PCT

REC'D 07 SEP 1999

WIPO



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IES/5782-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB98/01587	International filing date (day/month/year) 01/06/1998	Priority date (day/month/year) 02/06/1997
International Patent Classification (IPC) or national classification and IPC C09K11/06		
Applicant ISIS INNOVATION LIMITED et al.		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	<p>This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p>
3.	<p>This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 02/12/1998	Date of completion of this report 03.09.99
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. (+49-89) 2399-0 Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer Russell, G Telephone No. (+49-89) 2399 8738 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB98/01587

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-25 as originally filed

Claims, No.:

1-10,16-20 as originally filed

11-15,21-23 as received on 05/06/1999 with letter of 02/06/1999

Drawings, sheets:

1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/01587

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-23
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-23
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-23
	No:	Claims	

2. Citations and explanations

see separate sheet

Paragraph V:

1. Relevant cited prior art:

D3 WO-A-93 11 433

2. The disclosure **D3** relates to luminescent lanthanide comprising a lanthanide ion and a chelate. The chelator comprises three unsaturated heterocyclic rings covalently coupled to each other and additionally two chelating groups. The structure of the heterocyclic rings is formed from either one 2,6-pyridylene and two five-membered unsaturated heterocyclic ring moieties or two 2,6-pyridylene and one five-membered unsaturated heterocyclic ring moiety. 1,3-pyrazolylene is among the list of possible heterocyclic five-membered rings (claim 1; Examples 17, 18; Compounds 17, 18). Trispyrazolylborates ligands are not disclosed. The chelate forms in which the chelate groups together with the heterocyclic ring structure are chelated/complexed to the lanthanide ion. Example 18 describes an europium(III) chelate wherein the chelate ligand comprises two pyrazolyl groups in which one nitrogen atom of the pyrazolyl moiety forms a coordinate bond to the metal.

The chelates are useful as probes in time-resolved fluorescence microscopy, cytometry, multilabelling techniques and in process controls in industry. Their application in light emitting devices is not disclosed or suggested.

Therefore, the subject-matter of claims 1 to 23 fulfills the requirements of Articles 33(2) and 33(3) PCT.